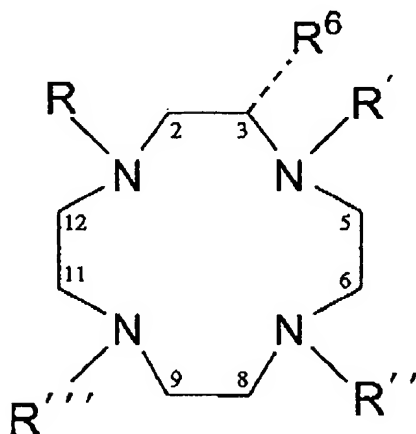


AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Presently Amended) A magnetic resonance contrast agent compound comprising:
a tetraazacyclododecane ligand having a general structural formula as follows:



and comprising a macrocyclic ring and wherein pendant arms R, R', R'' and R''' attached to a ring nitrogen have the general formula: $-C^*HR^1R^2$ and for three or more of said pendant arms a chirality of said carbon atoms C' are identical for each of said three or more pendant arms, said R¹ are groups larger than hydrogen, and said R² is selected from the group consisting of:

an alcohol ($-\text{CH}_2\text{OH}$);

amides ($-\text{CONR}^3\text{R}^4$, where R³ and R⁴ are organic groups);

a carboxyl ~~carboxylate~~ ($-\text{COOH}$);

phosphinates ($-\text{PO}_2\text{HR}^5$, where R^5 is an organic group); and

a phosphonate ($-\text{PO}(\text{OH})_2$); and

wherein one or more of substituents R^6 is a group larger than a methyl group and is located on one or more ring carbons; and

a paramagnetic metal ion coordinated to said tetraazacyclododecane ligand.

2. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 1, wherein said chirality of said carbon atoms C' provides said three or more of said pendant arms with a Λ or Δ orientation, and wherein a chirality of a ring carbon bonded to said one or more of substituents R^6 provides said macrocyclic ring with an identical orientation, $\lambda\lambda\lambda\lambda$ or $\delta\delta\delta\delta$, respectively, said tetraazacyclododecane ligand thereby having a monocapped twisted square antiprism coordination geometry.

3. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 2, wherein said R^2 group is said alcohol or amide, and further including a water molecule associated with said tetraazacyclododecane ligand and said paramagnetic metal ion, said water molecule having a residence lifetime at about 298°K , τ_M^{298} , of between about 1 and about 100 microseconds.

4. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 2, wherein said R^2 group is said carboxyl carboxylate, and further including a water molecule associated with said tetraazacyclododecane ligand and said paramagnetic metal ion,

said water molecule having a residence lifetime at about 298°K, τ_M^{298} , of between about 10 and about 100 nanoseconds.

5. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 1, wherein said chirality of said carbon atoms C' is controlled to provide said three or more of said pendant arms with a Δ or Λ orientation, and wherein a chirality of a ring carbon bonded to said one or more of substituents R⁶ provides said macrocyclic ring with an opposite orientation, $\lambda\lambda\lambda\lambda$ or $\delta\delta\delta\delta$, respectively, said tetraazacyclododecane ligand thereby having a monocapped square antiprism coordination geometry.

6. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 5, wherein said R² group is said alcohol or amide, and further including a water molecule associated with said tetraazacyclododecane ligand and said paramagnetic metal ion, said water molecule having a residence lifetime at about 298°K, τ_M^{298} , of between about 10 and about 5000 microseconds.

7. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 5, wherein said R² group is said carboxyl ~~carboxylate~~, and further including a water molecule associated with said tetraazacyclododecane ligand and said paramagnetic metal ion, said water molecule having a residence lifetime at about 298°K, τ_M^{298} , of between about 100 and about 500 nanoseconds.

8. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 5, wherein said R^2 group is said phosphonate or said phosphinate, and further including a water molecule associated with said tetraazacyclododecane ligand and said paramagnetic metal ion, said water molecule having a residence lifetime at about 298°K, τ_M^{298} , of between about 10 and about 100 nanoseconds.

9. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 1, wherein said R^1 is a methyl group, said R^2 is said carboxyl ~~carboxylate~~, and said R^6 is a *para*-aminobenzyl group and said paramagnetic metal ion is Gd^{3+} .

10. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 1, further including a water molecule associated with said tetraazacyclododecane ligand said water molecule having residence lifetime at about 298°K, τ_M^{298} , of about 15 nanoseconds.

11. (Presently Amended) The magnetic resonance contrast agent compound as recited in Claim 1, wherein at least one of said one or more of substituents R^6 include a functional group selected from the group consisting of:

amino groups;

carboxylates;

isothiocyanates; and

maleimides; and

a carrier component conjugated to said functional group.

12. The magnetic resonance contrast agent compound as recited in Claim 1, wherein said paramagnetic metal is a lanthanide ion.